RICOH

UXGA CCD Monochrome GigE Vision Camera

FV-G200B1

Product Specifications

RICOH COMPANY, LTD.

Revision History

Rev	Date	Changes	Note
1.00	2012/06/17	● Initial Release	

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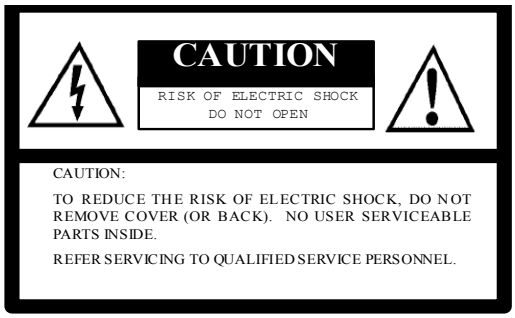
I. Safety / Product Precautions

Safety Precautions


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

For U.S.A.

Warning:

This equipment generates and uses radio frequency energy and if not installed and used properly, I.e., in strict accordance with the instruction manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

For Canada

Warning:

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Product Precautions

- Handle the camera with care. Do not abuse the camera. Avoid striking or shaking it. Improper handling or storage could damage the camera.
- Do not pull or damage the camera cable.
- During camera use, do not wrap the unit in any material. This will cause the internal temperature of the unit to increase.
- Do not expose the camera to moisture, or do not try to operate it in wet areas.
- Do not operate the camera beyond its temperature, humidity and power source ratings.
- While the camera is not being used, keep the lens or lens cap on the camera to prevent dust or contamination from getting in the CCD or filter area and scratching or damaging this area.
- Do not keep the camera under the following conditions:

  In wet, moist, and high humidity areas
  - Under hot direct sunlight
  - In high temperature areas
  - Near an object that releases a strong magnetic or electric field
  - Areas with strong vibrations
- Use a soft cloth to clean the camera. Use pressured air spray to clean the surface of the glass. DO not scratch the surface of the glass.
- The camera is a general-purpose electronic device; using the camera for the equipment that may threaten human life or cause dangers to human bodies directly in case of failure or malfunction of the camera is not guaranteed. Use the camera for special purposes at your own risk.

II. Electronic / Mechanical / Environmental Specifications

Product			FV-G200B1
Electronic Specifications	Imager		1/1.8” Interline UXGA monochrome progressive CCD: ICX274AL
	Total Picture Elements		1688 (H) x 1246 (V)
	Active Picture Elements		UXGA: 1624 (H) x 1236 (V)
	Cell Size		4.4 (H) x 4.4 (V) µm
	Scanning System		Progressive
	Vertical Frequency (Frame Rate)		15.31668 Hz at full resolution 0.29261 to 61.26674 Hz adjustable via the communication Maximum frame rate depends on the AOI setting Maximum frame rate of the camera(61.26674) is 230 vertical resolution AOI setting
	Horizontal Frequency		19.1761 kHz
	Pixel Frequency		36.8181 MHz
	Noise Level	@ 8bit output	≤ 3 Digit (Gain 0 dB)
		@ 10bit output	≤ 12 Digit (Gain 0 dB)
		@ 12bit output	≤ 48 Digit (Gain 0 dB)
	Minimum Scene Illumination		0.16 Lux at F1.2, 15.31668 Hz
	Sync. System		Internal
	Video Output		Digital 8, 10 or 12 bit Raw Data or RGB 8 bit
	Interface		IEEE802.3 (1000BASE-T)
	Protocol		GigE Vision® 1.2 and GenICam™ 2.0 compliant
	Shutter Speed		Preset continuous mode: 1 useconds to 16,777,216 useconds Preset trigger mode: 1 useconds to 16,777,216 useconds Pulse width mode: 1 useconds to Unlimited
	ALC		Auto iris lens, electronic iris and AGC (ON/OFF)
	Gain		0 to 20.4 dB
	Gamma		Gamma 1.0 (Factory default) or uploadable gamma table
	AOI Function		Programmable AOI setting via the communication
	Smear Reduction		Selectable ON/OFF via the communication
	Operational Mode		Free-run, Edge preset trigger, Pulse width trigger (unlimited long exposure)
	Communication		UART Communication through Ethernet port
	I/O		One opt-isolated input and two open-collector outputs
	Auto IRIS lens control		DC IRIS control input with video level target, peak/average and zone weight settings via the communication
	Power	Input Voltage	+10.8 to +26.4 Vdc
		Consumption	Less than 5.00 W
Mechanical Specifications	Dimensions		35 (W) x 35 (H) x 50.8(D) mm excluding connectors
	Optical Filter		No filter
	Optical Center Accuracy		Positional accuracy in H and V directions: +/- 0.3 mm Rotational accuracy of H and V: +/- 1.5 deg.
	Material		Aluminum (AC)
	Lens Mount		C mount
	Connectors		RJ45 connector Power/IO connector: HR10A-7R-6PB (Hirose) or equivalent DC IRIS lens connector: M1951 (EMUDEN) or equivalent
	Camera Mount Screws		Two 1/4” Tripod screw holes: (One on each top and bottom plate), Twelve M4 screws holes: (Four on each top and bottom plate, two on each side plate)
	Weight		Approximately 120 g

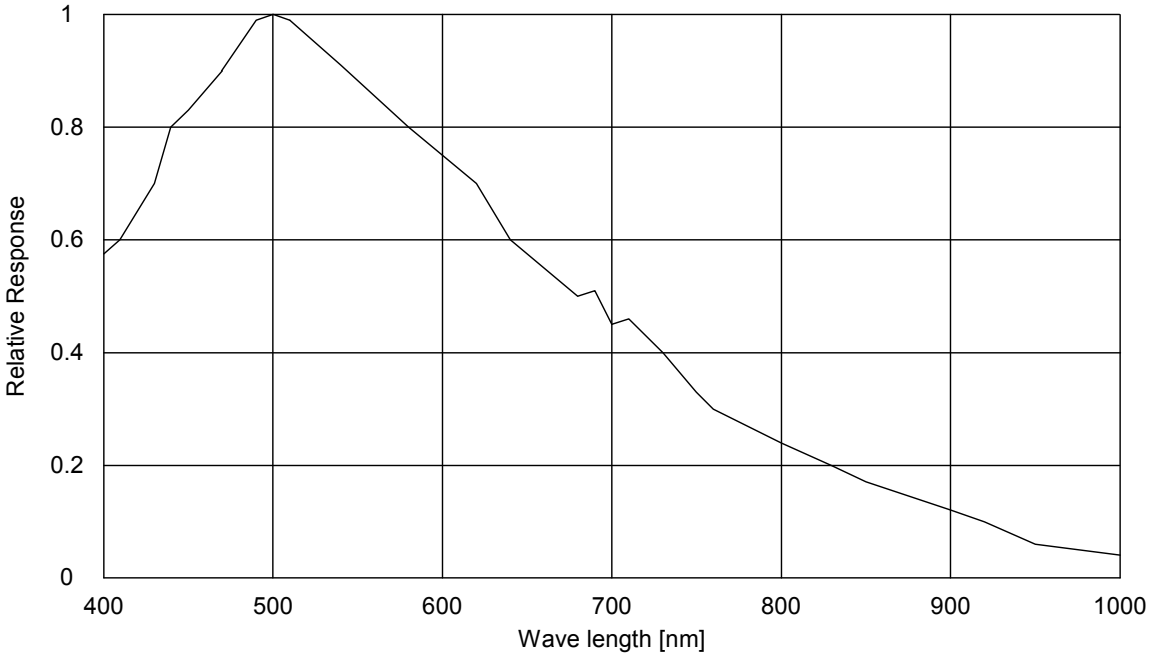
Product			FV-G200B1
Environmental Specifications	Operational Temperature	Minimum	Environmental Temperature -5^{0}C
		Maximum	Camera housing temperature (top plate) shall not exceed 65^{0}C (This corresponds to an environmental temperature of approximately 35^{0}C)
	Storage temperature		Environmental Temperature: -30^{0}C to 65^{0}C
	Vibration		20Hz to 200Hz to 20Hz (5min./cycle), acceleration 10G, 3 directions 30 min. each
	Shock		Acceleration 38G, half amplitude 6ms, 3 directions 3 times each
	Standard Compliancy		EMS: EN61000-6-2, EMI: EN55011, FCC PART15 subpart B classA
	RoHS		RoHS Compliant

Note: Please use this camera in surrounding temperature conditions that are less than 35^{0}C or in conditions where the camera's top case plate is less than 65^{0}C.

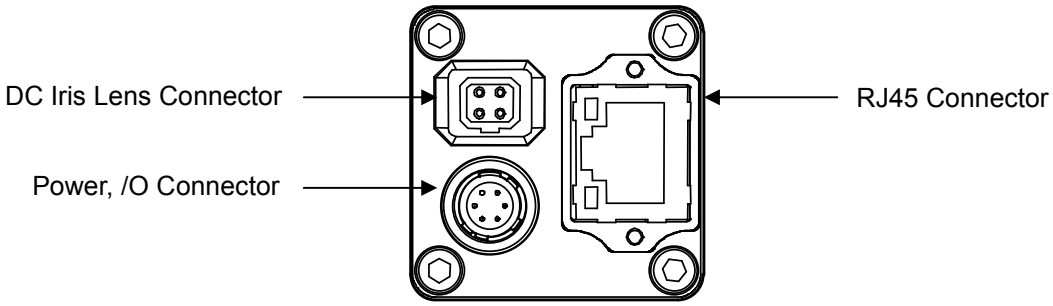
When the camera is used in surrounding temperatures that exceed 35^{0}C, please make sure that the camera is set up to properly radiate heat (maintaining the camera's top case plate's temperature to be less than 65^{0}C).

Taking these steps will maintain the heat rating of the electronic components of the camera.

A. Spectral Sensitivity Characteristics



III. Connector Specifications



A. RJ45 Connector

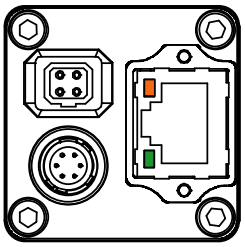
This product is NOT a PoE type. Apply power (+10.8 to +26.4Vdc) *ONLY* through the I/O connector.

Pin Assignment:

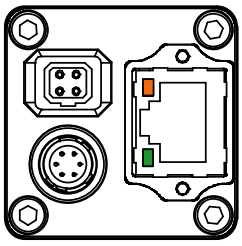
Pin No.	Signal Name
1	TA+
2	TA-
3	TB+
4	TC+
5	TC-
6	TB-
7	TD+
8	TD-

LED Information:

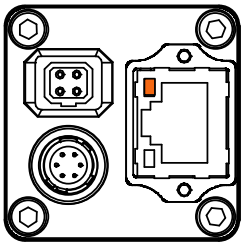
Green LED	Yellow LED	Status
Green Light ON	Orange Light ON	Power ON
Green Light ON	Orange Light Blinking	1 Gb Transferring
Light OFF	Orange Light Blinking	100 Mb Transferring



The camera is powered-on



Green light: ON
Yellow light:



Green light: OFF
Yellow light: Blinking

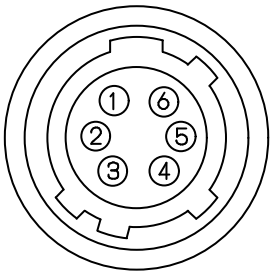
Please use a 1Gb supported NIC, HUB and LAN cable. Check that the NIC and HUB being used is "1Gb transferring".
Damaging or mishandling the CAT5e cable may cause the transferring speed to change from 1Gb to 100Mb. If this happens, please replace the CAT5e cable.

B. Power, I/O Connector

- HR10A-7R-6PB（Hirose）or equivalent
- This connector is for the power supply (12Vdc) and input /output signals.
- Use HR10A-7P-6S (Hirose) or equivalent for the cable side.

Pin Assignment

Pin No.	Signal Name	IN/OUT	Signals	Initial Output
1	GND	IN	GND	
2	IO_OUT1	OUT	+3.3V LVTTL	FrameTriggerWait
3	IO_OUT2	OUT	+3.3V LVTTL	ExposureActive
4	TRG_In-	IN	Isolated -	
5	TRG_In+	IN	Isolated +	
6	POWER IN	IN	+10.8 to +26.4 Vdc	



i. Input Signal

TRG IN: Input the trigger signal
High: +3.0 to +26.4V
Low: Smaller than 1.0V

ii. Output Signals

Set the output signals from the power/IO connector.
The following six output signals are selectable with the software or communication.

1） FrameTriggerWait

The user can check the camera condition (camera exposure and image output processing by the trigger signal with this FrameTriggerWait signal).

a) High status (3.3V): No processing by the trigger signal. The camera accepts the trigger signal.
b) Low status (0V): The camera is exposed and the image output processes by the trigger signal.

The camera default setting is the input trigger signal is INVALID while at the low status of this signal. When the exposure starts while the image output by the next trigger signal, please change the camera setting (Device code: 00H, Command: 13H) to accept the trigger signal while the image outputs.
The noise appears on the image when the exposure begins while the image is output. The noise appears on the image when the start exposure while the image is output. In this case, please change the “H reset” for the exposure start mode (Device code: 00H, Command: 12H) to change the exposure start point to the next HD timing.

2) ExposureActive

The user can check the exposure time with the ExposureActive signal.

a) High status (3.3V): The camera is exposing
b) Low status (0V): The camera is not exposed

3) TriggerAuxiliary

The TriggerAuxiliary signal is the input trigger signal.

4) TriggerInternal

The TriggerInternal signal is the input trigger signal with the trigger delay time.

5) UserOutput

The status of the UserOutput signal can change with the “UserOutputValue”.

a) High status (3.3V)
b) Low status (0V).

6) SensorReadOut

The SensorReadOut signal is the FVAL signal, which is the image output period of the time.

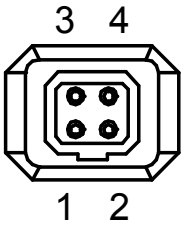
7) StrobeOut

C. DC Iris Lens Connector

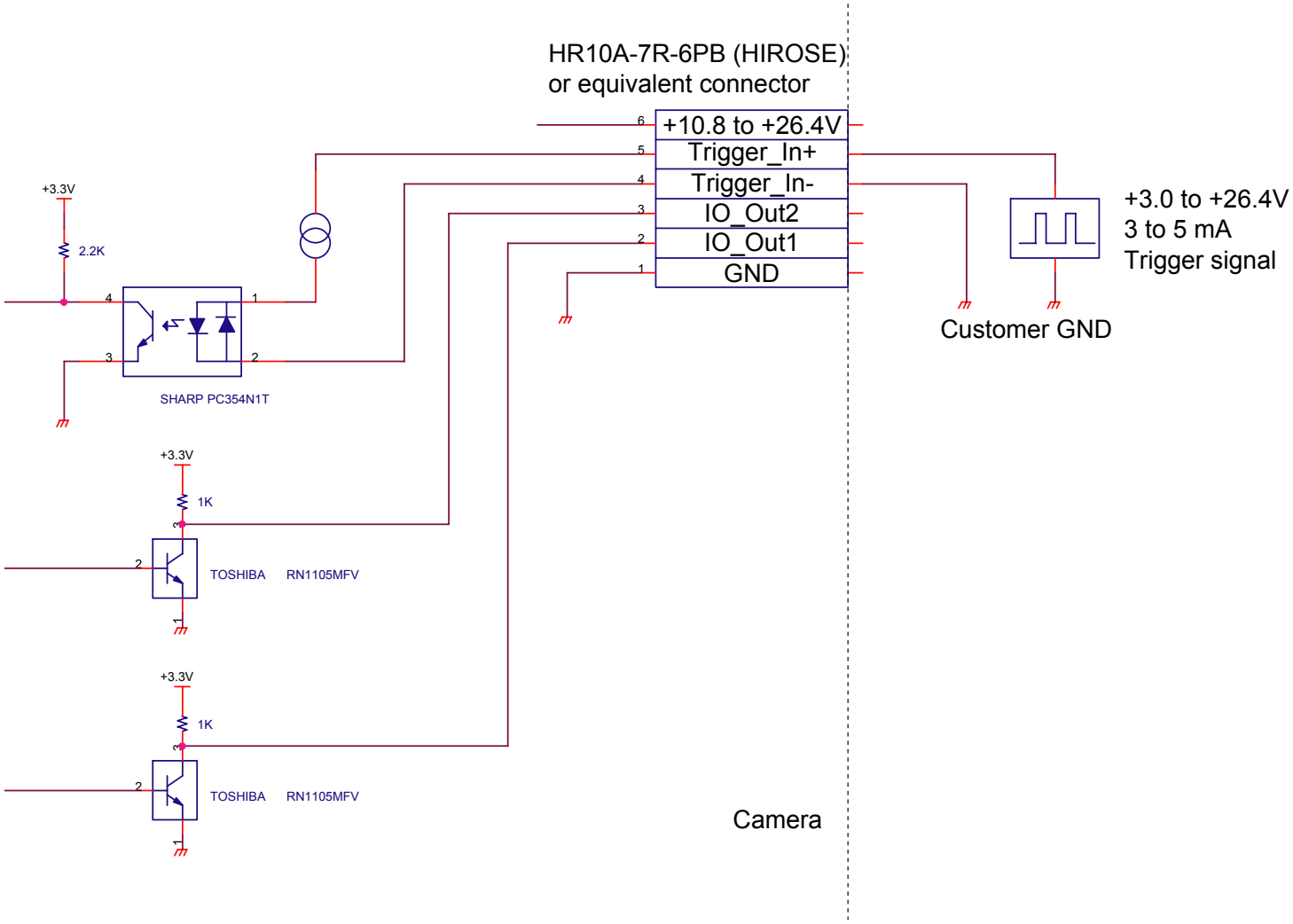
- M1951 (EMUDEN) or equivalent.

Pin Assignment

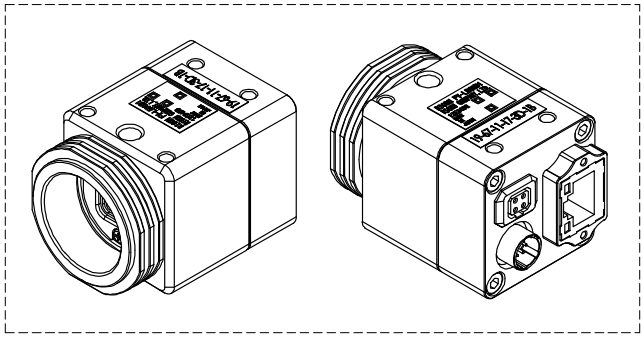
Pin No.	Signal Name
1	DAMP-
2	DAMP+
3	DRIVE+
4	DRIVE-

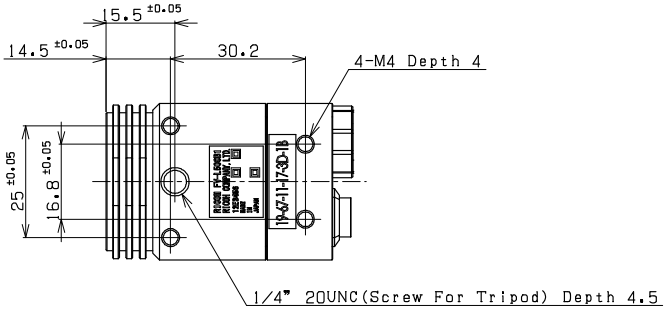


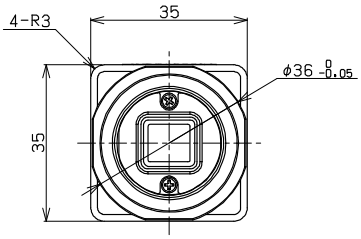
D. Equivalent Circuit for the Input Pin of the I/O Connector

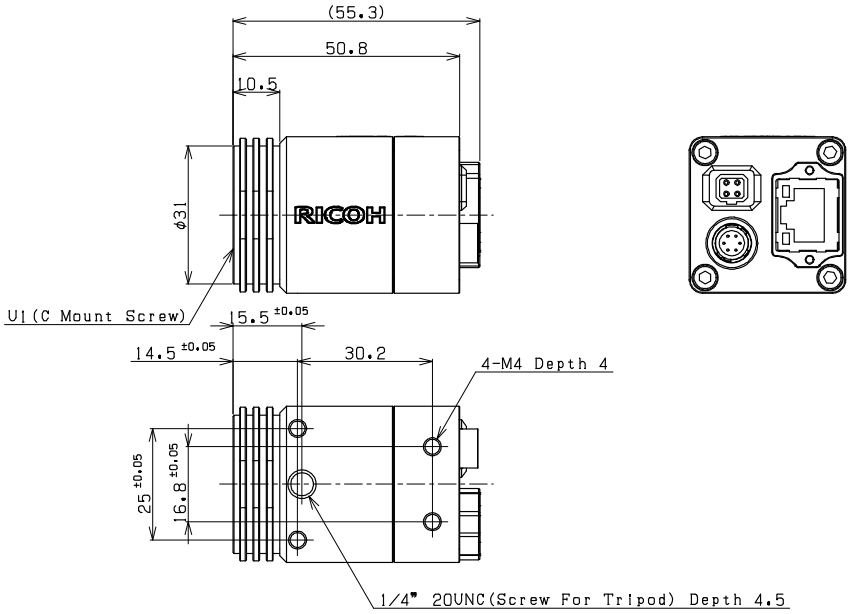


IV. Dimensions









Unit: mm

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